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Ribonucleases as antiviral agents

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Abstract

© 2014, Pleiades Publishing, Inc. Many ribonucleases (RNases) are able to inhibit the reproduction of viruses in infected cell cultures and laboratory animals, but the molecular mechanisms of their antiviral activity remain unclear. The review discusses the well-known RNases that possess established antiviral effects, including both intracellular RNases (RNase L, MCPIP1 protein, and eosinophil-associated RNases) and exogenous RNases (RNase A, BS-RNase, onconase, binase, and synthetic RNases). Attention is paid to two important, but not always obligatory, aspects of molecules of RNases that have antiviral properties, i.e., catalytic activity and ability to dimerize. The hypothetic scheme of virus elimination by exogenous RNases that reflects possible types of interaction of viruses and RNases with a cell is proposed. The evidence for RNases as classical components of immune defense and thus perspective agents for the development of new antiviral therapeutics is proposed.

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Keywords

antiviral activity, binase, BS-RNase, eosinophil-associated RNases, MCPIP1 protein, onconase, RNase A, RNase L, synthetic RNase, viruses